DOCUMENT RESUME

ED 314 281 SE 051 156

AUTHOR Payson, Patricia
TITLE Science Fiction: Self-Directed Study Units for Grades K-3 and 4-8, Gifted. Easily Adapted for Regular Classroom Use. Zephyr Learning Project.
REPORT NO ISBN-0-913705-18-7
PUB DATE 82
NOTE 82p.; For other units in this series, see SE 051 153-162. Revised edition.
AVAILABLE FROM Zephyr Press, 3865 East 34th Street, Suite 101, Tucson, AZ 85732-3448 (ZM04-R; $16.95).
PUB TYPE Guides - Classroom Use - Materials (For Learner) (051) -- Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Elementary Education; *Elementary School Science; *Gifted; Instructional Materials; Interdisciplinary Approach; Junior High Schools; Language Arts; *Middle Schools; *Science Activities; Science and Society; Science Education; *Science Fiction; *Secondary School Science; Technology

ABSTRACT

Originally designed for gifted students, these reproducible units on science fiction emphasize the use of higher order thinking skills and are appropriate for use in any classroom. Interdisciplinary in content, the units provide a broad view of science fiction. Included are two complete units, one created for the upper elementary gifted student and the other for the lower elementary gifted student. Suggestions for adapting the materials to fit other classrooms are included. Several learning modalities are designed into the materials to encourage active student participation. (CW)

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Zephyr Learning Packets

SCIENCE
FICTION

A SELF-DIRECTED LEARNING EXPERIENCE
Interdisciplinary – Product Oriented
Grades K – 8

SE 051 156

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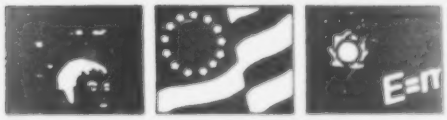
Zephyr



Learning Packet

A self-directed unit of the literature that contemplates the future and its mysteries.
Develops CRITICAL and CREATIVE THINKING.
Reproducible Units Grades K–3 and 4–8

SCIENCE FICTION:

Self-Directed Study Units for grades K-3 and 4-8, gifted

easily adapted for regular classroom use

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SCIENCE FICTION:

by Patricia Payson

Self-Directed Study Units for grades K-3 and 4-8, gifted

easily adapted for regular classroom use

Interdisciplinary and
Product Oriented
through the use of:

- Evaluating
- Classifying
- Comparing
- Imagining
- Researching
- Mapping & Charting
- Creating
- Reporting
- Thinking . . . Reacting
- Career Exploration

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TUCSON, ARIZONA

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ISBN 0-913705-18-7

Book Design: Penny Rebholz

Printed in the United States of America

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THE PREMISE

CHILDREN ARE ACTIVE PARTICIPANTS IN THEIR LEARNING, NOT PASSIVE VESSELS TO BE FILLED. THEY ARE ALWAYS SEEKING AND CHOOSING WHAT THEY WILL LEARN AND WHAT THEY WILL NOT LEARN. THEIR ACTIVE INVOLVEMENT IS CRUCIAL TO LEARNING. CHILDREN TEND TO BECOME PERSONALLY INVOLVED IN PROJECTS THAT APPEAL TO A VARIETY OF MODALITIES . . . READING, WRITING, BUILDING, CREATING, IMAGINING, AND REAL THINKING . . . SO A VARIETY OF EACH IS INCLUDED IN THIS SELF—DIRECTED LEARNING UNIT.

A WORD TO THE TEACHER

SCIENCE FICTION

Science Fiction, roughly defined, is a story . . . a fantasy . . . played in a surreal background; a fantasy that presumably could take place or be possible through given changes in science and technology.

Fascinating young and older creative minds since the days of Buck Rogers, science fiction is now a highly respected addition to the world of literature. Authors such as Asimov, Bova, Heinlein, Bradbury and L'Engle continue to tantalize their readers with possibilities of time warps, cloning, robots and adroids, special mental abilities and life on other planets. A number of the better-known authors are well-versed in the subject of real science and their vocabulary and scientific background lend a sense of realism to their stories. Not to be left out, the movie industry, with extravagant special effects, has captured the imagination of young and old alike until science fiction has become just another part of the mainstream of American culture.

"ONE CAN LEARN THE CAMPAIGNS OF THE CIVIL WAR WITH DATES, BATTLES AND CHARACTERS WITHOUT LEARNING ANYTHING ABOUT WHY WARS ARE FOUGHT BETWEEN FRIENDS OR WHAT IDEAS CAN BE GENERALIZED TO OTHER CONFLICT SITUATIONS."

James Gallagher,

Teaching the Gifted Child, 1974

RATIONALE FOR SELF-DIRECTED LEARNING

Our children's education must be more than the memorization of capitals of the states, the products of countries and the dates and places of past wars. Most teachers and parents would agree that what is also wanted is for children to learn to think for themselves, to organize their own time, to make wise choices, to work independently and to thoughtfully evaluate the results of their study.

OBSTACLES TO INDEPENDENT LEARNING

In spite of the teacher's best efforts, many, if not most, classroom settings are organized in such a way that students are involved in schedules and organizational plans that foster dependence rather than the independence we prefer. Students are told what is to be learned and how long it will take them to learn it. The resources are defined by the teacher and, afterwards, the teacher, rather than the student, decides whether the learning experience was a satisfactory and valuable one.

A LEARNING ATMOSPHERE

Each time we, as educators, focus on what our objectives are, we need to take a fresh look at our classroom mode of operation and evaluate the effectiveness of the way we teach. Quite naturally, for most of us, our teaching style has more to do with how we were taught than with what recent research has shown about the learning process. Even our good instincts have been overcome by the years of conditioning we have known in our own educational experiences.

Like a breath of fresh air, the recent findings coming from the research on the brain and how it operates are supporting our intuitive knowledge. This research is showing that our brains are receptive to learning only under certain conditions. Our job is to translate that information into a classroom atmosphere that provides:

- challenge
- freedom within structure
- trust and warmth
- opportunities to experience success
- personal involvement in the curricula

A natural transition generally occurs that transforms the former "teacher-lecturer" into a "fellow-learner". As a "fellow-learner" the teacher's role becomes one of a resource person, a facilitator and a classroom manager. In this maturing atmosphere, students gradually come to see themselves as responsible for their own learning and a foundation for self-direction is set.

• • •

At this point, a sometimes unexpected problem arises. We find the student no more ready for their independent learning than we, as teachers, were ready to allow it. This common occurrence is mentioned repeatedly in the literature dealing with programming for the gifted, an area where independent study and research are recommended as a major curricular activity (see **Suggested Reading List:** Maker (1982), Doherty & Evans (1980), and Feldhusen and Treffinger (1980).

FROM PASSIVE LEARNER TO ACTIVE PARTICIPANT (BRIDGING THE GAP)

The **ZEPHYR** self-directed study unit was developed expressly to bridge that gap . . . to transport the student from the position of passive recipient to that of an active participant in his/her own pursuit of knowledge.

Within the defined structure of each unit, the students are given opportunities to:

- make choices
- learn at their own pace
- learn in a manner more closely suited to their own learning style
- expand research skills
- use a variety of modalities
- plan their own time
- develop the skills of creative, critical and evaluative thinking
- experience whole-brain learning

Since responsibility for directing their own learning is so often an unfamiliar situation, the students will need your encouragement at the start. Generally, within six to nine weeks, most students will be well on their way from teacher dependence to self-motivation. (Beginning the venture with only a few choices, then gradually arranging the setting so that there are more and more choices, works best.) As students assume more responsibility, many teachers begin to consider the school library as just another part of the classroom . . . the benefits are many . . . from gaining a personal relationship with the librarian to learning about the enormous resources available, but often unused, in most school libraries.

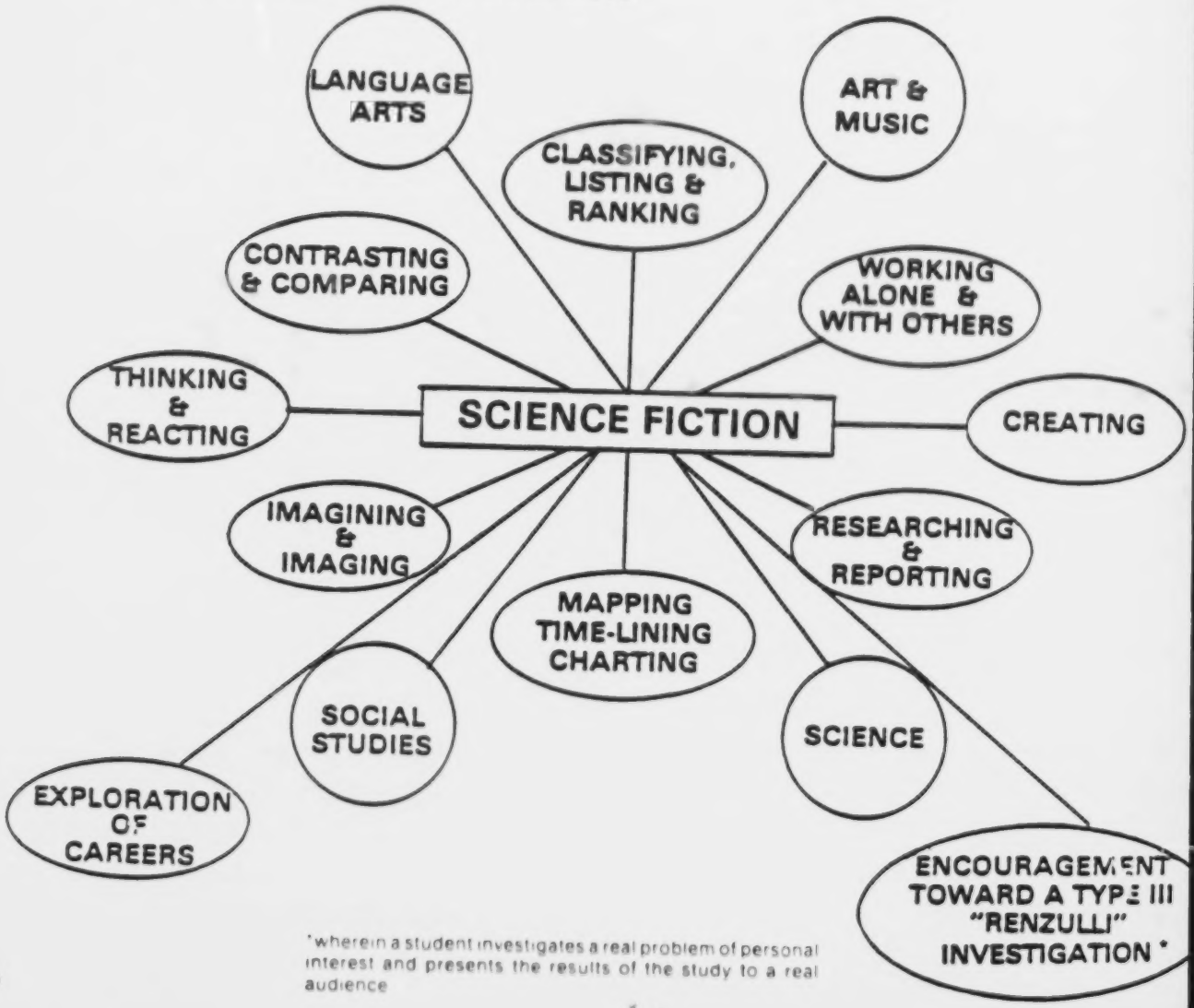
Eventually, a few students will be ready for a true investigative research study of professional quality as suggested by Joseph Renzulli in **The Enrichment Triad Model, A Guide for Developing Programs for the Gifted and Talented,** 1977.

THE FORMAT

Originally developed for the gifted student, these units emphasize the use of the higher level thinking skills . . . and are appropriate for use in any classroom where the goal is to encourage students to become responsible for their own education.

Interdisciplinary in content, the unit envelops a broad view of the topic by integrating the "basics" into each activity.

Within this book are two complete units; one created for the upper elementary gifted student and the other for the lower elementary gifted student. Suggestions for adaptations for adjusting either of the levels to fit any individual classroom are included.



*wherein a student investigates a real problem of personal interest and presents the results of the study to a real audience

SUGGESTED READINGS

SELF-DIRECTED STUDY

"Bells, Groups and Independent Study", **Psychology and Education of the Gifted.** Barbe, W. and Renzulli, J. New York, 1975. Irvington Publishers.

Creative Questioning and Sensitive Listening Techniques. Carin, A. and Sund, R. Columbus, Ohio, 1978. Charles Merrill Publishing Company.

Creative Thinking and Problem Solving in Gifted Education. Feldhusen and Treffinger. Dubuque, Iowa, 1980. Kendall-Hunt Publishing.

Curriculum Development for the Gifted. Maker, C.J. Rockville, Maryland, 1982. Aspen Systems Corporation.

Enrichment Triad Model: A Guide for Developing Defensible Programs for the Gifted and Talented. Renzulli, J. Mansfield, Connecticut, 1977. Creative Learning Press.

Growing Up Gifted. Clark, B. Columbus, Ohio, 1978. Charles Merrill Publishing Company.

Open to Change: Options for Teaching Self-Directed Learners. Malehorn, H. Palo Alto, California, 1978. Scott Foresman Company.

Self Concept and School Achievement. Purkey. Englewood Cliffs, N.J., 1970. Prentice-Hall, Inc.

Self Starter Kit for Independent Learning. Doherty and Evans. Austin, Texas, 1980. Special Education Associates.

Teaching the Gifted Child. Gallagher, J. Boston, Massachusetts, 1975. Allyn and Bacon

INTEREST DEVELOPMENT CENTER

SCIENCE FICTION

THE PURPOSE OF THE INTEREST DEVELOPMENT CENTER IS TO STIMULATE INTEREST IN THE TOPIC AREA. THE STUDENTS NEEDS TIME FOR BROWSING AND INVESTIGATION FOR MAXIMUM BENEFIT.

Beginning ideas . . . . . you and your students will think of more . . . . let parents and other teachers know about the Center and it will many times grow without effort.

BOOKS (suggested subjects):

- ROBOTS
- SPACE
- CLONING
- SCIENCE FICTION
- BLACK HOLES
- SPACE EXPLORATION
- COMPUTERS

POSTERS:

- SPACE ART
- SPACE EXPLORATION
- ASTRONOMICAL CHARTS
- ADVERTISING FOR SCIENCE FICTION MOVIES

MAGAZINES:

- OMNI
- GALAXY
- ANALOG
- ETERNITY
- MERCURY

RECORDS & TAPES:

- SOUND TRACKS OF SCIENCE FICTION MOVIES
- COPY OF "WAR OF THE WORLDS"

TOYS & GAMES WITH A SCIENCE FICTION THEME

ART SUPPLIES

NEWS CLIPPINGS, MAGAZINE ARTICLES, ANNOUNCEMENT OF TV SPECIALS on related subjects.

I HEAR ..... AND I FORGET
I SEE ..... AND I REMEMBER
I DO ..... AND I UNDERSTAND
(source unknown)

GETTING STARTED

1. **Select a topic** as an extension of a regular curricular subject (particularly when your class seems to crave more) . . . or . . . select a topic to pursue that is of particular interest and may not be part of the curricula. To **zero in on special interests**, administer an interest survey to each student.

2. **Copy the unit for each student.** When using these units for the entire class you may want to expand or delete activities for individual students.

3. **Set up a center** in the classroom **that encourages exploration** in the subject field. You'll want to in-include a wide variety of materials. **Be creative,** the purpose of the center is to **excite the student in this subject area** so begin with **lots of "hands on" materials . . . . allow for ample browsing time** and **encourage the student to investigate** and become absorbed . . . . **at the level of a true professional.**

4. With the students, **go over each activity** in the unit, discussing and answering any questions. The **teacher is an integral key** in successful implementation. Because most children are already well-versed in the **"One Right Answer Game"**, they will need encouragement to branch out into many of the open-ended activities in the packets.

5. **Set the stage** . . . plan to **conference as needed** . . . . **provide resources as needed** . . . . then **get out of the way** and let your students learn.

6. **Give as much time** as each student needs to complete each activity in the unit. The entire packet might take from five to ten weeks or longer.

7. As each activity is completed and evaluated, **initial the symbol** located near each activity number. You will want to **evaluate** on the basis of what response is appropriate for **that student.**

8. When a student shows an extreme interest in the topic, the completion of this unit might be only the beginning. This student may well be ready for further study and research and **needs** only the **resources, guidance and freedom** to pursue his/her well-planned project.

In preparation for further research, the student will need to decide:

WHAT WILL THE STUDY BE? (what will be investigated and produced)

WHERE WILL BACKGROUND INFORMATION BE FOUND? (i.e., speakers, interviews, books, films, microfiche, documents, etc.)

WHAT, EXACTLY, WILL BE THE FORM OF THE PRODUCT? (a model, a manuscript, or . . .)

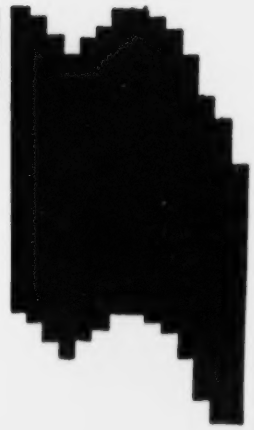
WHO MIGHT BE INTERESTED IN THE PRODUCT? (professionals in the field, publishers, organizations, etc.)

WHAT IS NEEDED TO BEGIN? (specific plans, resources, deadlines . .)

AGAIN . . . STEP BACK . . . PROVIDE GUIDANCE . . .
and LET HIM/HER GO!

SCIENCE FICTION

UNIT I



NAME _____

DATE _____

The following pages are to be reproduced for use in your classroom. You may want to copy directly from this book or cut the pages out first . . . then keep them in a folder to use another year.

Have you wondered what Science Fiction is?

Close your eyes for a minute and think about the words . . . . Science Fiction. What picture does your mind see? How would you describe the picture? . . . Exciting? . . . Frightening? . . . Startling? . . . Fascinating?

LIST WHAT YOU SAW

WHAT YOU SAW

THE COLORS

THE SHAPES

SOME ACTION WORDS

Go to the library and talk to the librarian about **Science Fiction**.

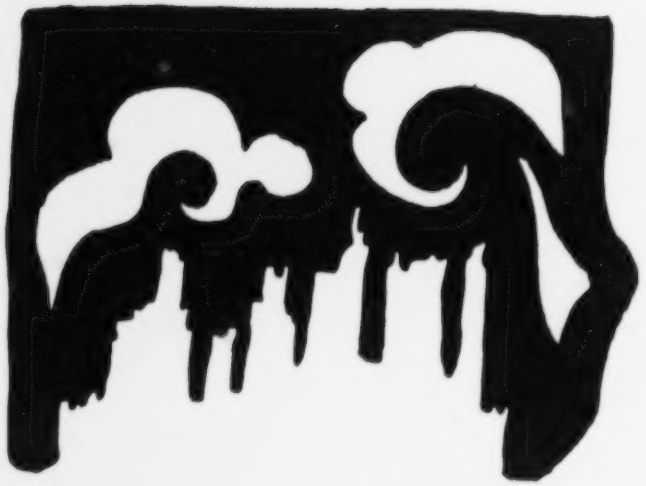
FIND OUT

*How the librarian describes Science Fiction.

*Where the Science Fiction books are shelved.

THEN

Choose 10 Science Fiction books.
Spend some time enjoying them.



DESCRIBE what interests you most about these books: _____

_____

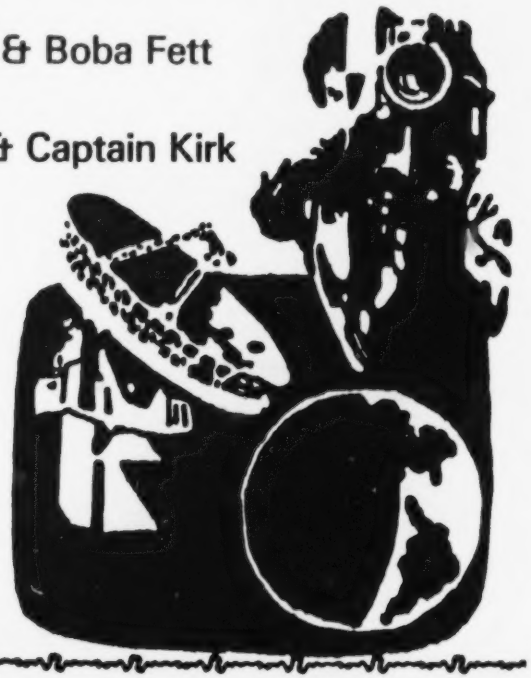
_____

_____

_____

Here are some titles of Science Fiction movies, TV shows and books. Draw a line connecting the **title** to the **characters** from that story.

Star Wars	Uncle Lucky & Hector Hornblower
My Trip to Alpha I	Yoda & Lando Calrissian
Star Trek	Aunt Katherine DeVanter & the Arbos
Matthew Looney's Invasion of the Earth	Ben Kenobi & Boba Fett
The Empire Strikes Back	Mr. Spock & Captain Kirk



3 Solve The Mystery

READ A SCIENCE FICTION STORY.

If several of your classmates are reading the same story . . . get together and talk about

- the main characters
- the plot
- your favorite part
- what part you would like to change.

If you are the only one reading the story, find someone and tell that person about it.

4 Read

Find out what these words mean. Then make a seek and find puzzle using them.
(You might want to add some Science Fiction words of your own.)

ROBOT

CLONE

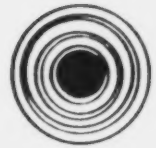
ALIEN

GALAXY

Make copies of your puzzle for your friends.

5 Vocabulary

Find out about
Black Holes, Neutron Stars and Quasars.



Find out about the
Seven Wonders of the Ancient World.

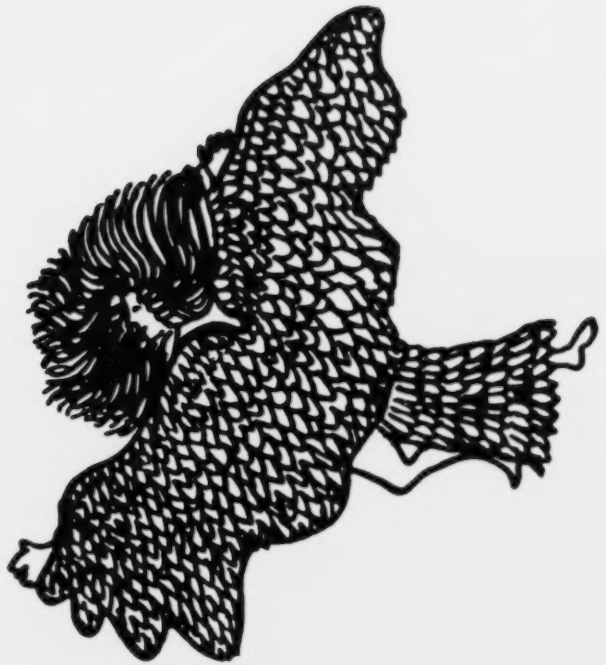
Find out about the
foods used by astronauts.

Show what you found by making

- ☐ a chart
- ☐ a model (check one)
- ☐ a mobile

Find out about the
history of robots.

6 Choose One



Create some sounds of the future
or
of an alien world
and
make a tape

OR

Create an exhibit of Space Art
(yours, your classmates or pictures you find)

Recipe for Space Art:

Tempera paint
Sponge pieces
Paper
You and your paint shirt

7 Use Your Imagination

In Science Fiction stories people sometimes have unusual abilities:

- Hearing from great distances
- Seeing through walls (x-ray vision)

- Knowing what another person is thinking (reading another person's mind)

- Arms and legs that stretch as far as needed

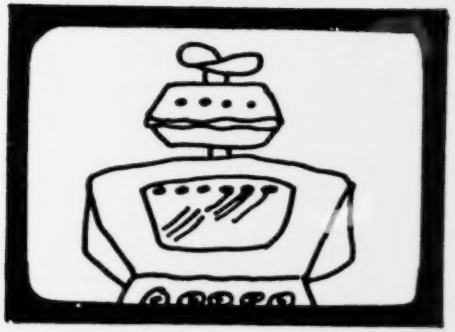
- _____

(your idea)

Pretend that you have one of these abilities.
Think about a day in your life.
Start when you wake in the morning and end when you go to bed at night.

THEN
divide a large paper into 4 or 8 squares. Draw pictures of "you" using your ability in different ways.

8 Unusual Abilities



What if
a television set could watch your every movement in your house?
How would that change your life?

What if
you could travel through time?
Where would you want to go? Why?

What if
cloning were possible?
Who would you choose to be cloned?
Why?

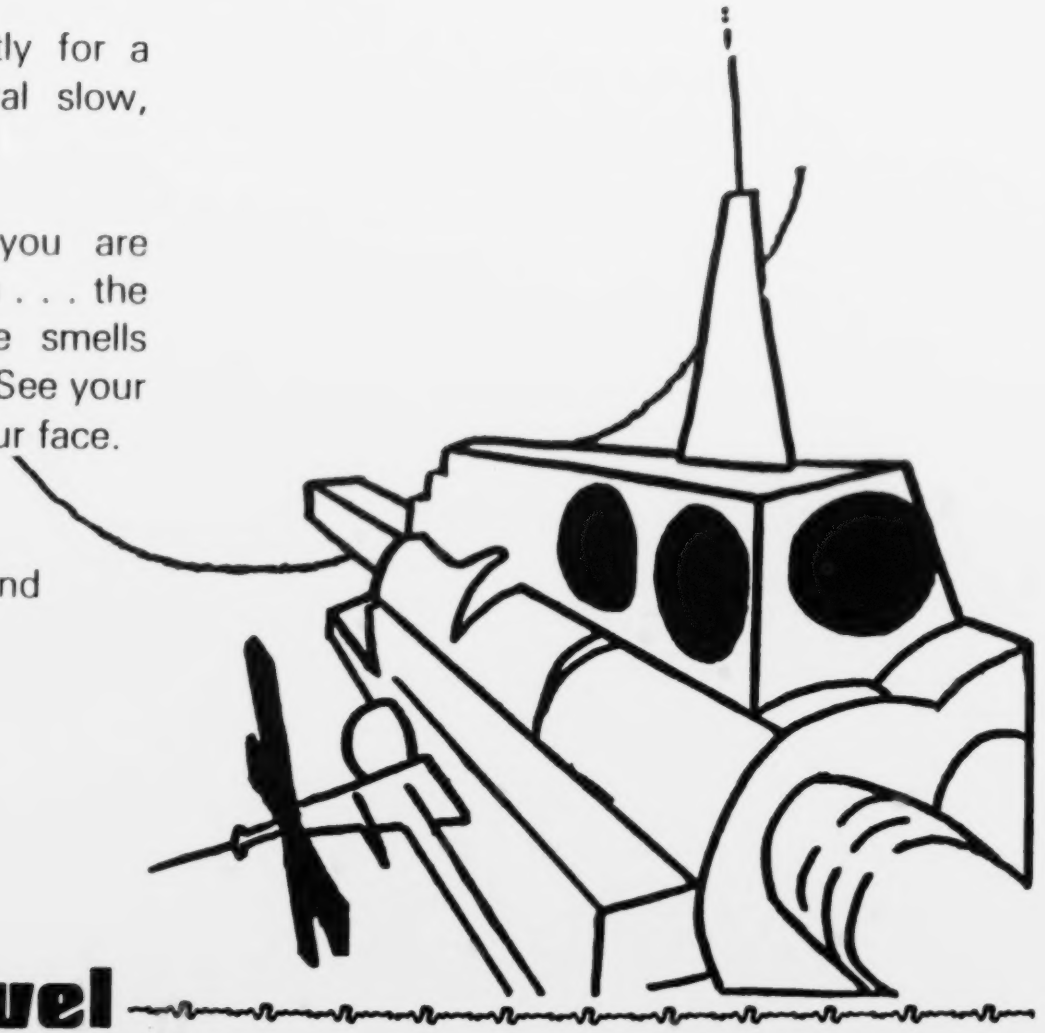
What if
people could be made invisible?
How would that be good? . . . . .
How would that be bad?

Imagine that you can transport yourself through time . . .

Close your eyes . . . sit quietly for a few minutes . . . . take several slow, deep breaths . . . .

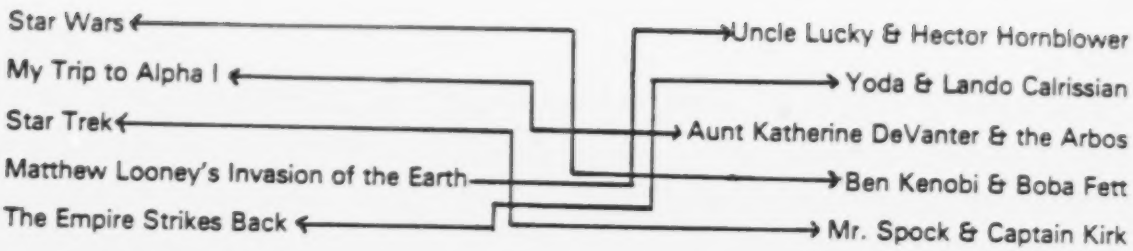
See yourself . . . see what you are doing . . . notice who is there . . . the colors . . . the sounds . . . the smells . . . the feelings in your body. See your face . . . notice the look on your face.

Draw what you saw.
Show the drawing to a friend and describe it all.



10 Time Travel

3. SOLVE THE MYSTERY — KEY


Star Wars
My Trip to Alpha I
Star Trek
Matthew Looney's Invasion of the Earth
The Empire Strikes Back
Uncle Lucky & Hector Hornblower
Yoda & Lando Calrissian
Aunt Katherine DeVanter & the Arbos
Ben Kenobi & Boba Fett
Mr. Spock & Captain Kirk

SUGGESTIONS FOR ADAPTING THE UNIT TO YOUR PARTICULAR TEACHING-LEARNING SITUATION

1. Require fewer, or more, research sources.

2. Assign more of the activities to small groups instead of to individual students.

3. Give fewer or more choices.

4. Delete some activities altogether.

5. Arrange the unit to be a class project with students choosing different parts to complete.

6. Add some activities of your own.

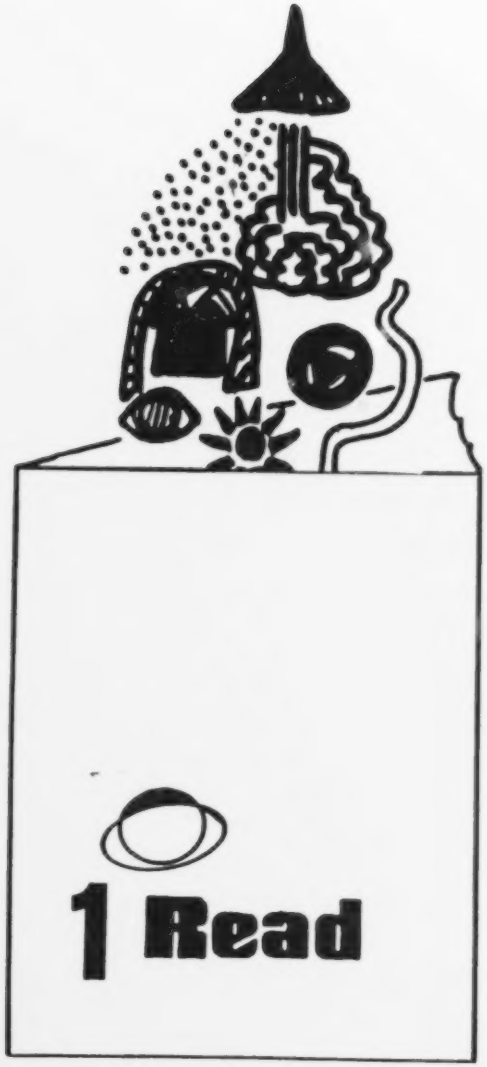
SCIENCE FICTION

UNIT II

NAME _____

DATE _____

The following pages are to be reproduced for use in your classroom. You may want to copy directly from this book or cut the pages out first . . . then keep them in a folder to use another year.



Read 2 science fiction novels like Asimov's ***I Robot***, Christopher's ***The White Moutains*** or Norton's ***Moon of Three Rings*** and 1 short story (Asimov's ***Nightfall***, for instance).

Have your teacher approve them before you begin reading.

If several of your classmates are reading the same work . . . THEN . . . discuss the plots and main themes of your readings together (also discuss whether the author handled it believably and whether you agree with the way things turned out).

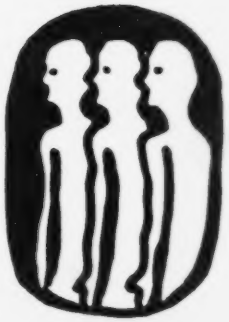
Write a brief description of the plot, main theme, etc., including your impressions and the believability of the story.

Find out about the authors of the 2 novels you read or 2 others from the bibliography. Try to find out why they write science fiction and what sorts of themes or plots they generally use. Correspond with one of the authors about his writing, if possible.

Find out about some Buck Rogers comic strips by Phil Nowlan in the 1930's to 1950's. View several of the current TV series episodes and the 1979 movie also, if possible. Compare and contrast the 2 versions.

What differences do you see in the characters, events, and background because of the 30 to 40 year differential?

Present your findings to your class.



2 Choose One

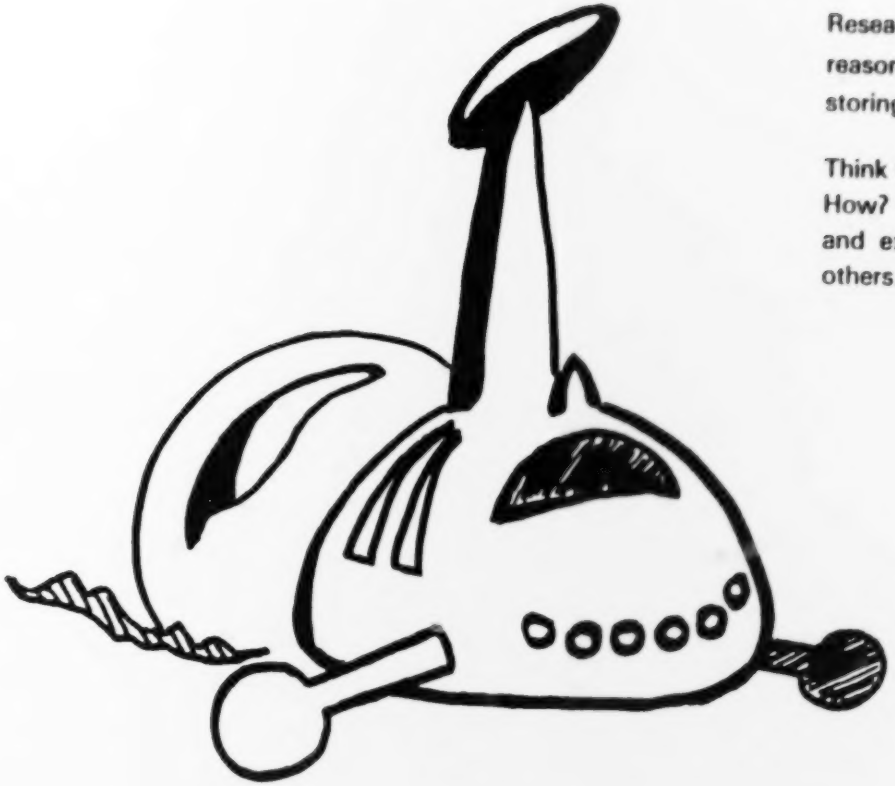
Compare & Contrast

Define science fiction.
Compare and contrast it with fantasy and horror works.

Compare and contrast science fiction writing with science fiction on film. What are the strong points of each medium?

Compare and contrast life as you know it on earth in the 1980's with life in one of the science fiction stories you have read . . . the family structure, values, etc.

Select a story which you can both read and see on film. Which version is more effective? Which came first in this instance, the written or film version? Which were you in touch with first? Did this make a difference?



Research the foods used by present-day astronauts, the reasons for their selections and the problems involved in storing and serving food at zero gravity.

Think to the future: Will foods used on space trips change? How? Why? Speculate about foods used on space stations and extra-terrestrial colonies. Present the information to others. Choose your own form.

OR

Research the history and construction of robots or rocket engines. Display your findings with charts, diagrams, murals, or models.

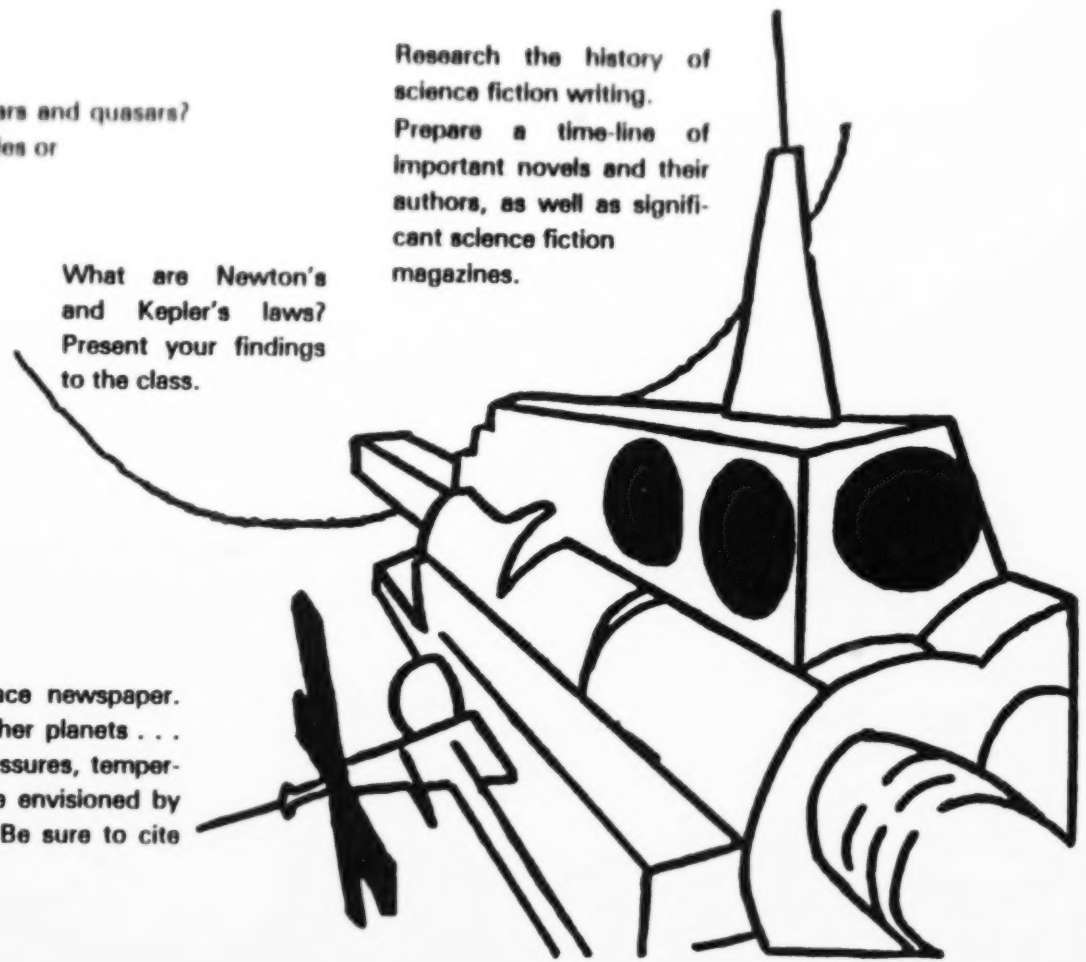
Investigate the evidence of life in outer space. Write a paragraph proving or disproving the possibility based on the evidence now available.

What is known of black holes, neutron stars and quasars? Research and report your findings on mobiles or project cubes.

What are the limitations to space travel as we now understand them? . . . Consider speeds and time necessary to reach other star systems. Prepare a mural or display showing the differences.

What are Newton's and Kepler's laws? Present your findings to the class.

You are the horticultural editor of a space newspaper. Write an article describing plant life on other planets . . . keep in mind the varying atmospheres, pressures, temperatures, etc. Mention examples of plant life envisioned by authors of science fiction you have read. Be sure to cite the conditions the plants live under.



5 Choose One

What is currently known of extrasensory perception? Find at least three published opinions. Conduct your own experiment. Share your findings.

Research the history of science fiction writing. Prepare a time-line of important novels and their authors, as well as significant science fiction magazines.

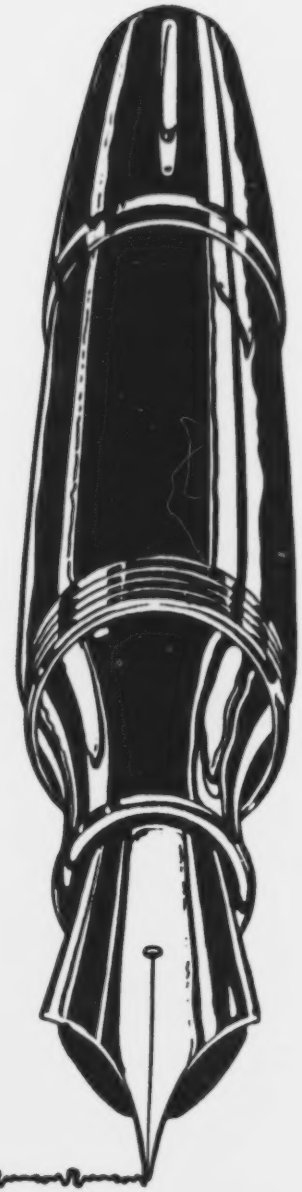
Choose One:

Keep a log of a space journey to various real or imaginary star systems and planets.

Write a letter to be opened about the year 2010, to your future teenage son or daughter.

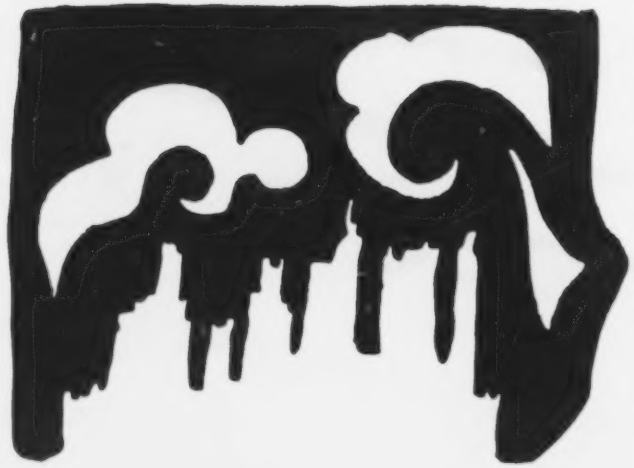
Write (and perform or tape) a sales talk between a salesman for a people-freezing firm and a possible customer.

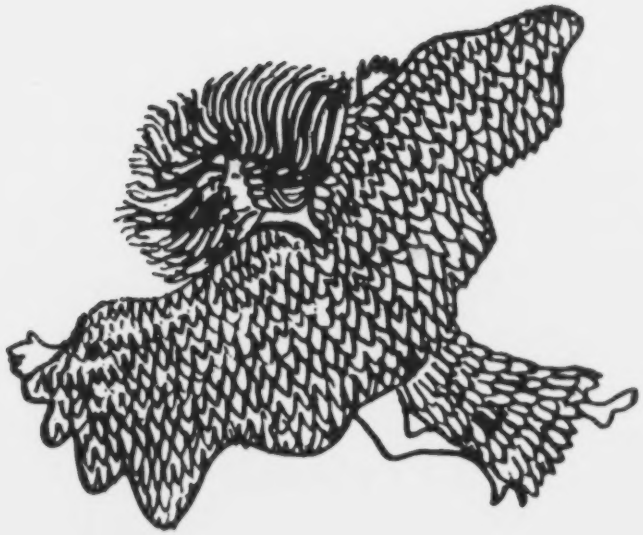
You are a passenger on a space flight to form a new colony. You may take one trunk measuring 3'x4'x2'. Make a list of the items you will take. Justify your selections.



6 With Pen In Hand

Research at least 3 space artists (include Chesley Bonestell). What problems must space artists deal with? How has space art changed over the past century?





Create an exhibit of space art (yours, your classmates, or the work of professional space artists).

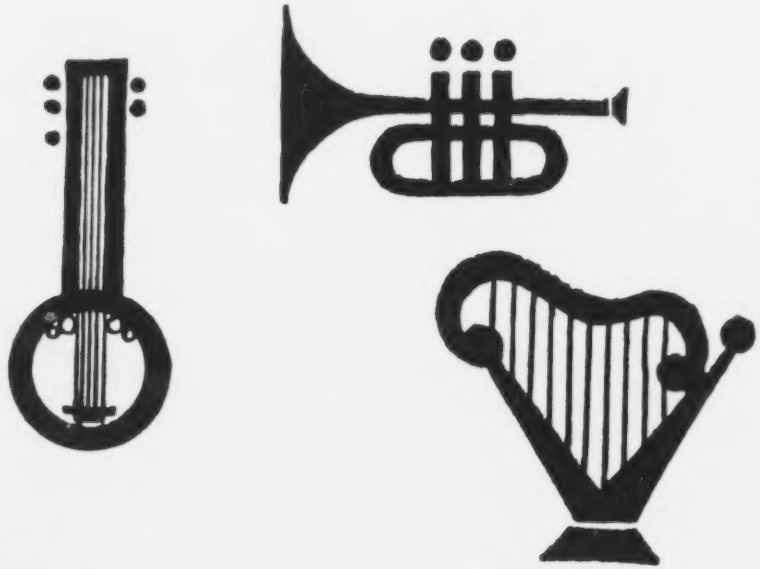
7 SPACE ART

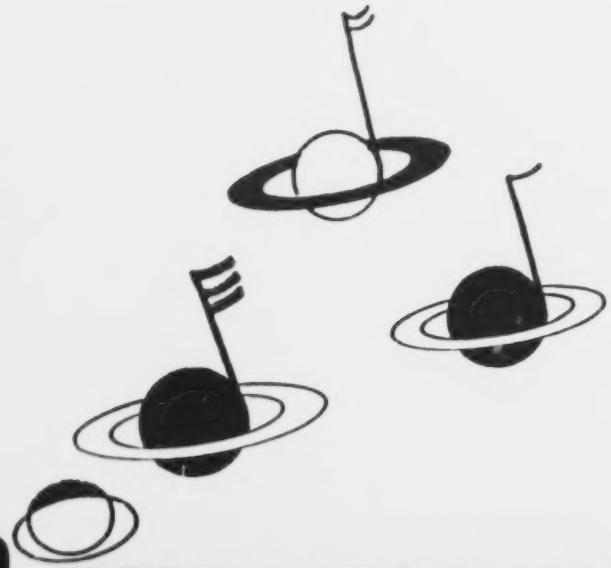
Listen to recordings of:

- music describing space travel and phenomena
- instruments suggesting other worlds or beings
- background music for science fiction dramas

(see the bibliography and "Mercury", May/June '77 and Nov./Dec. '79)

Which instruments create which effects?



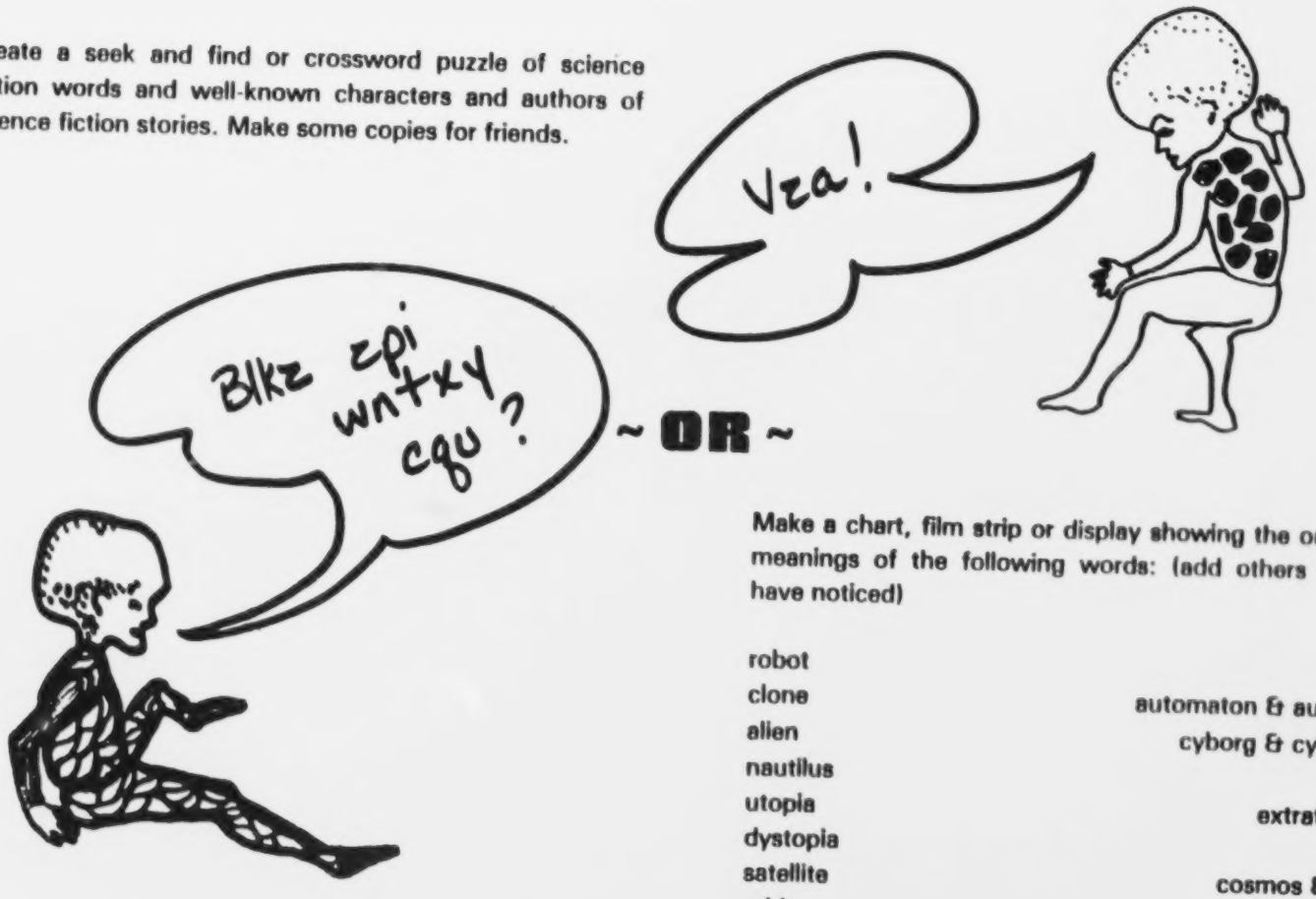


Create some music
or
sounds of the future
or
an alien world.
How do creatures react to it . . . do they listen passively, dance to it, sing, etc.?

Tape and/or perform your creation.

8 SPACE MUSIC

Create a seek and find or crossword puzzle of science fiction words and well-known characters and authors of science fiction stories. Make some copies for friends.



~ OR ~

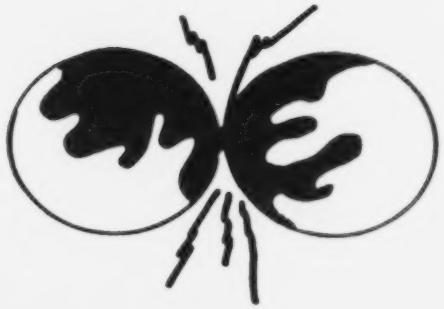
Make a chart, film strip or display showing the origins and meanings of the following words: (add others you may have noticed)

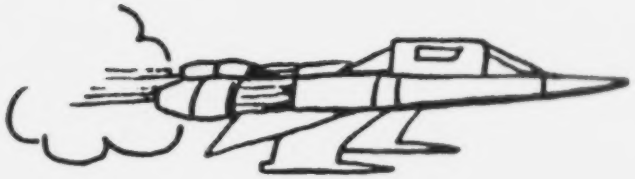
robot
clone
alien
nautilus
utopia
dystopia
satellite
orbit
velocity
stellar
grok (a new "made-up" word)

android
automaton & automation
cyborg & cybernetics
binary
extraterrestrial
galaxy
cosmos & cosmic
mutant & mutation
psi power
hyper space

9 Vocabulary Etymology

Pretend you are 5 years old. Listen to Orson Welles' radio version of ***The War of the Worlds***. What is your reaction? What is the reaction of the other members of your family? (emotions, imaginings, etc.)

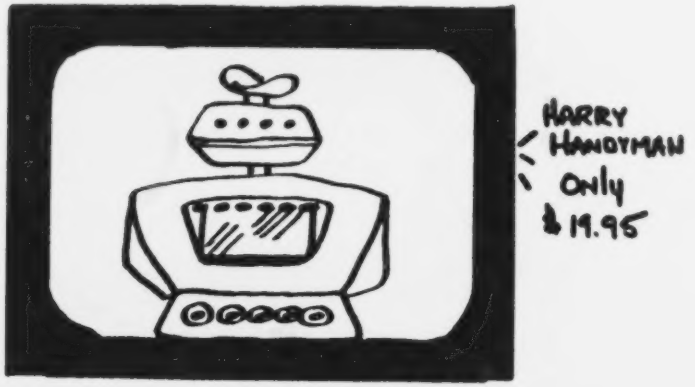




Make a model of a spaceship or a city of the future. Keep in mind the basic needs of the inhabitants: food, clothing, shelter, work, leisure and defense. (Consider adding a diagram of an individual's personal living quarters.)

Imagine that you are in the advertising business in the year 2080. Plan an advertising campaign for some form of transportation, clothing, recreation, food or make up an item to advertise.

What media will you use?

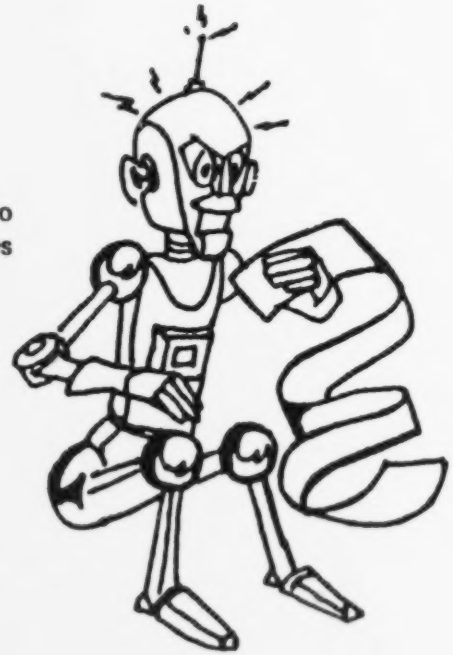


10 Use Your Imagination

What if . . .
a machine were invented which could predict with absolute accuracy the date of a person's death? Would you use the machine to find out the date of your death? the date of your parents' deaths? your friends'?

What if . . .
a television set could be programmed to watch you no matter where you were in your house? What changes might there be for you?

What if . . .
cloning were possible? Would you choose to be duplicated? Would you choose to have someone else duplicated? What might some of the consequences be?



What if . . .
communications were established with other worlds? Should we trust them? Should they trust us?

What if . . .
people could live to be hundreds of years old? How long would you choose to live? What conditions would you require?

What if . . .
people were able to be made invisible? What would be the benefits to you?

What if . . .
people could travel through time and space? Where would you want to go? When? Why?

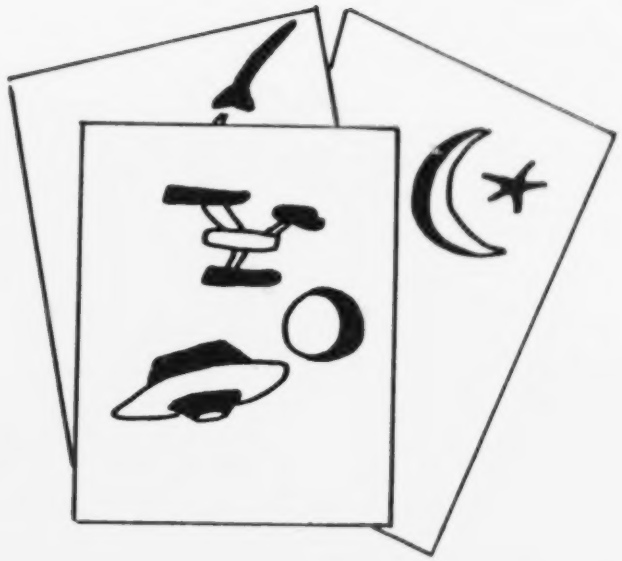
What if . . .
robots took over most of the menial tasks now performed by humans? How would this change your life? Your parents' lives? The lives of people whose livelihood comes from menial work?

Make up some "what-ifs" of your own.
Read ***Grokking the Future***, Hollister and Thompson, for more.

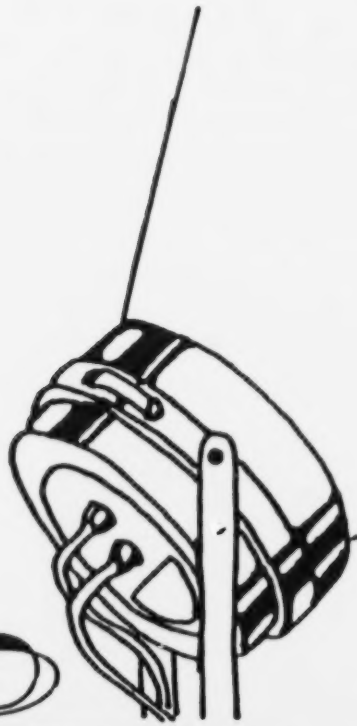
Look at several science fiction magazines, include OMNI and at least two from this list:

Galaxy
Analog
Fantasy & Science Fiction
Eternity.

Create your own science fiction magazine.



~ OR ~



Produce a science fiction drama, either an original story or an adaptation of a published story (will it be a radio play or a stage production?).

12 WITH SOME FRIENDS or BY YOURSELF

SCIENCE (non) FICTION

14

What is gravity? How would it affect creatures' structure and behavior if it were significantly different from earth's? How do astronauts cope with and react to zero gravity?

15

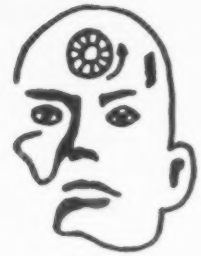
Look up the Seven Wonders of the Ancient World.

What might be the wonders of a future solar system or galaxy?

Prepare a chart or display with a description including their history and location. (See OMNI magazine, December '79, if possible.)

THE WONDERS OF THE ANCIENT WORLD

List the science fiction novels and short stories you have read . . . and their authors. (You may also include movies.) Circle the ones where beings of different worlds meet each other. How do these beings communicate with each other?



How do you rate these methods of communicating? Are they credible? Was communication, or lack of it, important in these stories?

Survey other students and/or adults who read science fiction and add the additional titles to your list.

What do you think of the hypothesis that language shapes perception . . . in other words, the idea that the particular language people speak is very important to the way they think about things and to what they perceive around them?

In the following list, the first word or two of one title has been joined to the last words of another title. Unscramble the titles and match them to their correct author in the second column. Hint: Your library's copy of ***Books in Print*** or ***Children's Books in Print*** or the card catalog will be extremely helpful, as will the fiction bibliography for this unit.

Have Spacesuit of Steel	*Madeleine L'Engle*
Out from the Stars	*Robert Heinlein*
Planet of Three Rings	*H.G. Wells*
Enchantress Will Travel	*John Christopher*
A Wrinkle Machine	*Isaac Asimov*
Moon of the Silent Planet	*Sylvia Engdahl*
The Time of the Apes	*Alexander Key*
The White Door	*Pierre Boulle*
The Caves in Time	*C.S. Louis*
The Forgotten Mountains	*Andre Norton*

Sample answer:
Have Spacesuit, Will Travel by *Robert Heinlein*

Make up some of your own!

17 SCRAMBLED science fiction book titles

Exploring The Arts

an opportunity to integrate art experiences within an academic content area.

by
Stephany Mack

While each component . . . the self-directed learning unit and Exploring the Arts . . . is a complete and valid learning experience in itself, together they provide a more comprehensive and lasting educational experience for the learner.

Bibliography

PERIODICAL ARTICLES

Bylinsky, Gene. "Life in Darwin's Universe". **Omni.** (Sept. 1979) Speculations on extraterrestrial life forms.

Clarke, Arthur C. "Electronic Tutors". **Omni.** (June 1980) Predictions on future uses of computers and calculators.

Dunn, Philip. "Seven Wonders of the Universe". **Omni.** (Dec. 1979) Artistic and verbal renderings of imaginative future wonders.

Durant, F.F. "Eyewitness of Space". **Omni.** (Sept. 1979) Space art, including paintings of several of the astronauts.

_____. "Infinite Voyager". **Omni.** (Feb. 1980) Art of Chesley Bonestell.

_____. "How to Build a Time Machine". **Omni.** (May 1980)

Fraknoi, Andrew. "Music of the Spheres: Astronomical Sources of Musical Inspiration". **Mercury.** (May/June 1977) Bibliography of recordings relating to space and astronomical themes with commentary.

_____ "More Music of the Spheres." **Mercury.** (Nov/Dec. 1979)

Freitas, Robert A. "Illegal Aliens". **Omni.** (Nov. 1979) Examines possible problems and rights of alien beings on Earth.

Interview with Gordon Cooper. **Omni.** (Mar. 1980) Questions and answers on what the future holds.

Lart, Neil L. "Astronomy in Science Fiction". **Mercury.** (May/June 1976) Short descriptions of many science fiction stories and novels with a bibliography of short story collections. Includes remarks on types of interstellar travel employed by science fiction writers.

McCorduck, Pamela. "Artificial Intelligence: Visions of the Future". **Eternity.** (Vol. 1, No. 1)

Reis, Iris B. "Approaching the Universe Through Art". **Mercury.** (Nov. 1974) Summary of interviews with modern artists who try to express knowledge about the universe with space-age materials and processes. Photos of space art paintings and sculpture.

Sheckley, Robert. "Star Seekers". **Omni.** (Mar. 1980) Space art examples with descriptions.

FICTION (NOVELS)

(Numbers in parentheses are grade levels suggested by publishers and/or reviewing media as appropriate for the reading ability and interest of the *average* student. Titles with asterisk are particularly well-written and recommended.)

PRIMARY GRADES

Beatty, Jerome. **Matthew Looney's Invasion of the Earth** plus 3 sequels.
Del Rey, Lester. **The Runaway Robot**
Earnshaw, Brian. **Dragonfall 5 and the Royal Beast** (3-6) plus 2 sequels
*Jackson, Jacqueline. **The Endless Pavement** (3-6)

76

Lord, Beman. **The Day the Spaceship Landed** (3-6) plus sequel
Morrissey, John. **The Humans of Ziax II** (3-6) plus sequel
Norton, Andre. **Star Ka'at** (3-5) plus 2 sequels
_____. **Outside** (3-5)
Pinkwater, Manus. **Fat Men from Space** (3-5)
Slobodkin, Louis. **The Space Ship Under the Apple Tree** (3-5) plus 2 sequels
Slote, Alfred. **My Robot Buddy** (3-5)

INTERMEDIATE GRADES

Ames, Mildred. **Is There Life on a Plastic Planet** (4-6)
Asimov, Isaac. **The Fantastic Voyage** (7 and up)
*_____. **I Robot** (8 and up)
Bonham, Frank. **The Missing Persons' League** (4-7)
Bova, Ben. **City of Darkness** (7-10)
_____. **Exiled from EArth** (5-9)
_____. **Star Watchman** (7-10)
_____. **The Weathermakers** (7-10)
Cameron, Cleanor. **The Wonderful Flight to the Mushroom Planet** (4-6) plus 4 sequels
Christopher, John. **Empty World** (5-9)
_____. **The Guardians** (6-9)
_____. **The Lotus Caves** (6-9)
*_____. **The Prince in Waiting** (5-9) plus 2 sequels
*_____. **The White Moutains** (5-9) plus 2 sequels
Clarke, Arthur C. **Dolphin Island** (6 and up)
Del Ray, Lester. **Moon of Mutiny** (7-9)
_____. **The Mysterious Planet**
_____. **Outpost of Jupiter** (5-9)
_____. **Tunnel Through Time** (5-9)
Eldridge, Roger. **Shadow of the Gloom World** (6-9)
*Engdahl, Sylvia. **Enchantress from the Stars** (6 and up) plus sequel
Engdahl, Sylvia. **Journey Between Worlds** (7 and up)
_____. **This Star Shall Abide** plus sequel (7 and up)
Harrison, Harry. **The Men from P.I.G. and R.O.B.O.T.** (5-8)
*Heinlein, Robert. **Citizen of the Galaxy** (5-10)
_____. **Have Space Suit, Will Travel**
_____. **Red Planet** (5-9)
_____. **Starship Troopers**
*Hoover, Helen. **Chilren of Morrow** (4-6) plus sequel
*_____. **The Delikon** (5-7)
_____. **The Lost Star**
*_____. **The Rains of Eridan** (5-8)
Jakes, John. **Time Gate** (5-9)
Key, Alexander. **Escape to Witch Mountain** (5-7) plus sequel
_____. **The Forgotten Door** (5-7)
_____. **Jagger, the Dog from Nowhere** (5-7)
*L'Engle, Madeleine. **A Wrinkle in Time** (6-9) plus 2 sequels
Norton, Andre. **Android at Arms** (7 and up)
_____. **The Jargoon Pard** (7 and up)
_____. **Moon of Three Rings** (7 and up)
_____. **Steel Magic** (5-8)
and many other titles too numerous to list
*McCafferey, Anne. **Dragonsong** (5-9) plus 2 sequels
Nourse, Alan. **The Blade Runner** (7 and up)
_____. **Raiders from the Rings**
_____. **Star Surgeon** (6-9)
Ormondroyd, Edward. **Time at the Top** (4-7) plus sequel
Packard, Edward. **The Third Planet from Altair**
*Pesek, Ludek. **The Earth is Near** (5-9)
_____. **Log of a Moon Expedition** (5-7)

Pinkwater, Manus. **Alan Mendelsohn, the Boy from Mars**
Townsend, John R. **The Visitors** (6-9)
Williams, Jay. **Danny Dunn and the Voice from Space** (4-6)
*Yep, Laurence. **Sweetwater** (5 and up)

TEENAGE (Fiction)

(Most, if not all, of these titles could be called classics of science fiction. They were written as adult novels.)

Asimov, Isaac. **The Caves of Steel**
_____. **The Gods Themselves**
_____. **Foundation** plus 2 sequels
Bellamy, Edward. **Looking Backward**
Blish, James. **A Case of Conscience**
Boulle, Pierre. **Planet of the Apes**
Bradbury, Ray. **Farenheit 451**
_____. **The Martian Chronicles**
Burroughs, Edgar Rice. **A Princess of Mars** plus several sequels
Caidin, Martin. **Cyborg**
Clarke, Arthur C. **Childhood's End**
_____. **Rendezvouz with Rama**
Clement, Hal. **Mission of Gravity** plus sequel
Heinlein, Robert. **Double Star**
Huxley, Aldous. **Brave New World**
Lewis, C.S. **Out of the Silent Planet** plus 2 sequels
Lindsay, David. **A Voyage to Arcturus**
Orwell, George. **1984**
Shelley, Mary. **Frankenstein**
Simak, Clifford. **City**
_____. **Way Station**
Stapledon, Olaf. **Star Maker**
_____. **Way Station**

_____. **Sirius**
Verne, Jules. **From the Earth to the Moon**
_____. **Twenty Thousand Leagues Under the Sea**
Wells, H.G. **The Invisible Man**
_____. **The Island of Dr. Moreau**
_____. **The Time Machine**
_____. **The War of the Worlds**
Wyndham, John. **The Day of the Triffids**

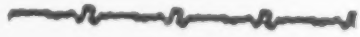
SHORT STORIES

Asimov, Isaac. **The Best of Isaac Asimov**
Bradbury, Ray. **R is for Rocket** (7 and up)
Carr, Terry. **To Follow A Star: 9 Science Fiction Stories About Christmas** (7-10)
Clarke, Arthur C. **The Nine Billion Names of God**
_____. **The Wind from the Sun**
DeCamp, Catherine. **Creatures of the Cosmos** (4-6)
DeCampe, L. Sprague. **Tales Beyond Time: From Fantasy to Science Fiction** (4-6)
Elwood, Roger. **Science Fiction Tales** (4-8)
_____. **More Science Fiction Tales** (4-8)
Ginsburg, Mirra. **The Air of Mars & Other Stores of Time and Space** (5-9)
*Karl, Jean. **The Turning Place** (5-6)
Knight, Damon. **Toward Infinity** (6 & up)
Silverberg, Robert. **Mind to Mind**
_____. **The Science Fiction Bestiary**

ADULT

(These well-known and highly regarded novels may be considered too mature for non-adult students because of passages of sex and/or violence. However, the teacher should be aware of them and under some circumstances might wish to inform students of them. It is suggested that a recommending adult read them first.)

Bester, Alfred. **The Demolished Man**
_____. **The Stars My Destination**
Delany, Samuel. **The Einstein Intersection**
Dick, Philip K. **The Man in the High Castle**
_____. **Solar Lottery**
Herbert, Frank. **Dune** plus 2 sequels
LeGuin, Ursula. **The Dispossessed**
_____. **The Lathe of Heaven**
_____. **The Left Hand of Darkness**
Leiber, Fritz. **The Swords of Lankhmar**
_____. **The Wanderer**
McCaffrey, Ann. **Dragonflight** plus 2 sequels
Miller, Walter. **A Canticle for Leibowitz**
Niven, Larry. **Ringworld**
Panshin, Alexei. **Rite of Passage**
Pohl, Frederick. **The Space Merchants**
Sturgeon, Theodore. **More Than Human**
Van Vogt, A.E. **Destination Universe**
_____. **Slan**
_____. **The World of Null A**
Zelazny, Roger. **Four for Tomorrow**
_____. **Lord of Light**
_____. **Nine Princess in Amber** plus 4 sequels



NONFICTION

Aldiss, Brian. **Billion Year Spree.** Schocken, 1973. Extensive history of science fiction showing relationships to other literature.

Asimov, Isaac. **Today and Tomorrow and . . . .** Doubleday, 1973. Collection of essays about several sciences which may serve as backgrounds for science fiction.

Aylesworth, Thomas. **Monsters from the Movies.** (4-8) Lippincott, 1972.

_____. **Movie Monsters** (1-3) Lippincott, 1975.

Barlowe, Wayne D. and Ian Summers. **Barlowe's Guide to Extraterrestrials.** Workman, 1979. Illustrations and descriptions of characters from well-known science fiction works, including **A Wrinkle in Time, The White Mountains,** and **Mission of Gravity.**

Barron, Neil. **Anatomy of Wonder: Science Fiction.** Bowker, 1976. Guide to over 1000 works of science fiction. Includes a condensed history of science fiction words.

*Bergaust, Eric. **Colonizing Space.** (5-8) Putnam, 1978.

*_____. **Colonizing the Planets: The Factual Story of Manned Interplanetary Flight.** (5-8) Putnam, 1975. Projected plans for manned exploration and settlement of Venus and extended exploration of other planets.

Berger, Melvin. **Bionics.** (5 and up) Watts, 1978. Includes biomedical engineering and cybernetics. Traces develoment of bionic-like devices and contributions of bionics to daily life.

_____. **The Supernatural: From ESP to UFO's.** (6-9) Crowell, 1977. Includes a chapter on psychokinesis.

*Bova, Ben. **The Seeds of Tomorrow.** (7-9) McKay, 1977. Explains ways in which scientific and technological knowledge can alleviate such world problems as overpopulation, pollution, depletion of resources and war.

*_____. **Through the Eyes of Wonder: Science Fiction and Science.** (5 and up) Addison-Wesley, 1975.

*Branley, Franklyn. **The Milky Way: Galaxy Number 1.** (7 and up) Crowell, 1969. The basic astronomical data on our galaxy.

Bretnor, Reginald. **Science Fiction: Today and Tomorrow.** Penguin, 1975. Original essays by science fiction writers.

*Brewton, Sara, Comp. **Of Quarks, Quasars, and Other Quirks.** (5 and up) Crowell, 1977. Poetry relating to astronomical subjects and the space age.

Cohen, Daniel. **Creatures from UFO's.** (5-9) Dodd, 1978.

*Coward, David, ed. **Twentieth Century American Science Fiction Writers.** Gale, 1980. Essays on 88 science fiction authors.

Edelson, Edward. **Great Monsters of the Movies.** (4-8) Doubleday, 1973.

_____. **Great Science Fiction from the Movies.** (6-9) Archway, 1976.

*_____. **Visions of Tomorrow.** (4-7) Doubleday, 1975.

Encyclopedia of Science Fiction. Octopus, 1978.

*Gallant, Roy. **Beyond Earth: The Search for Extraterrestrial Life.** (7 and up) Four Winds, 1977. Reviews Darwin's discoveries about changing species. Examines possibility of extraterrestrial life and efforts already made to contact such civilizations.

Gunn, James. **Alternate Worlds: The Illustrated History of Science Fiction.** Prentice, 1975. Extensive history of the field.

Hollister, Bernard C. and Deanne C. Thompson. **Grokking the Future: Science Fiction in the Classroom. Pflaum/Standard, 1973. This is "must" reading for the science fiction teacher.

Knight, David C. **Colonies in Orbit.** (4-8) Morrow, 1977.

*Kraske, Robert. **Is There Life in Outer Space?.** (5-8) Harcourt, 1976. Examines evidence of theories on life elsewhere.

Last, Martin and Baird Searles. **The Science Fiction Quiz Book.** Signet, 1976.

Macvey, John. **Interstellar Travel: Past, Present and Future.** (Young Adult) Stein & Day, 1977. Surveys possibilities of deep space travel and examines likely instances of past and present extraterrestrial visits.

Manchel, Frank. **An Album of Great Science Fiction Films.** (6 & up). Watts, 1976.

*Miller, Ron. **Space Art.** O'Quinn Studio/Starlog Magazine, 1978. Contains descriptions of many well-known space artists with illustrations of their work, plus an excellent bibliography of books and locations where space art may be seen and/or purchased.

Moore, Patrick. **The New Challenge of the Stars.** Rand McNally, 1978.

Reichardt, Jasie. **Robots: Fact, Fiction and Predictions.** Penguin, 1978. (obtainable from Publishers Central Bureau)

Rutland, Jonathon. **The World of Robots.** (4-8) Warwick, 1979.

Science Fiction Anthology. Troubadour Press. A coloring book with a brief summary of several well-known novels.

Siegel, Richard and Jean-Claude Suares. **Alien Creatures.** Reed Books, 1978. Movie and television portrayals of aliens. (obtainable from Publishers Central Bureau)

*Simon, Seymour. **Space Monsters: From Movies, TV and Books.** (3-6) Lippincott, 1977.

Smith, Norman. **Space: What's Out There?.** (3-6) Coward, 1976.

Scholes, Robert and Eric Rabkin. **Science Fiction: History—Science—Vision. Oxford, 1977. Important background for the science fiction teacher, as well as the student.

Stine, Harry. **Shuttle Into Space.** (6-9) Follett, 1978.

Thorne, Ian. **Frankenstein.** (4-6) Crestwood House, 1977.

Townsend, John Rowe. **A Sense of Story.** Horn Book, 1973. Biographies of children's authors, including those of science fiction writers Madeleine L'Engle, John Christopher, Andre Norton.

U.S. Library of Congress. Science Policy Research Division. **Possibility of Intelligent Life Elsewhere in the Universe.** (Revised Oct. 1977). U.S. Government Printing Office. Prepared for the Committee on Science and Technology, U.S. House of Representatives.

SPACE ART

(See book by Ron Miller for more complete lists of places to view and purchase space art.)

Adler Planetarium. Chicago, Illinois
Collection of art by Chesley Bonestell.

Alabama Space and Rocket Center. Huntsville, Alabama
Collection of art by Chesley Bonestell.

Astronomical Art. P.O. Box 274, Woodbridge, VA 22194
Source of prints and original art.

Bonestell Space Art. P.O. Box 35, Palo Alto, CA 94302
Source of art by Chesley Bonestell.

Big O Posters, Inc. Box 6186, Charlottesville, VA 22906
Producers of science fiction and fantasy posters.

Hayden Planetarium. New York City
Walk-through space murals.

Flandrau Planetarium. Tucson, Arizona
Art collection and source of prints and slides.

NASA Headquarters. Washington, D.C.
Display of art.

Smithsonian Institute. National Air and Space Museum. Washington, D.C.
Major collection of art and graphics. Source of reproductions and prints.

RECORDINGS

(See the May/June 1977 and the Nov/Dec 1979 issues of *Mercury* for extensive bibliographies relating to space and astronomical phenomena. Also consult the Electronic Music section of the Schwann Record and Tape Guide for recordings of this kind of sound.)

Dissevelt, Tom. **"Song of the Second Moon"**, Mercury Limelight LS 86050.

Ellis, Don and Survival. **"Music from Other Galaxies and Planets"** Atlantic SD 18227.

Glazer, Tom and Dottie Evans. **"Space Songs and Experiment Songs"** Motivation MR0312 and 0316. For young people.

Hawkwind. **"Quarks, Strangeness and Charm"** Sire SR K 6047.

Kazdin and Shepard. **"Everything You Always Wanted to Hear on the Moog"** Col M 30383 Moog Synthesizer pieces.

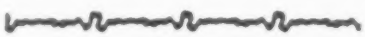
Papthanassious, Vangelis. **"Albedo"** RCA LPL 1-5136.

Sun Ray. **"Cosmos"** Inner City IC 1020.

Wells, H. G. **"Orson Welles' War of the Worlds"** Murray Hill. (Or cassette by National Recording Co.)

Williams, John. **"Close Encounters of the Third Kind: Original Soundtrack"** Artista AL 9500.

Williams, John. **"Star Wars: The Original Soundtrack"** 20th Century 2T-541.



FILMSTRIPS

"Beyond Science Fiction". SVE. 4 filmstrips: (1) Cloning (2) Bionics (3) Death (4) Thinking Machines. Robots, Androids and Computers. Captioned with sound. Intended as high interest, easy reading material for older students, and information is sound for all ages.

"Science Fiction". SVE. 4 filmstrips: (1) Off On A Comet (2) The Time Travelers (3) The Mortal Immortal (4) The People of the Pit. Captioned with sound. Easy, abridged versions of famous stories.

"The War of the Worlds". SVE. 4 filmstrips.

"Reading for the Fun of It: Science Fiction". Guidance. Excellent summaries of 10 good science fiction novels for young people with commentary on types and themes of science fiction writing.